

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C. 20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 04 October 2000 (04.10.00)	
International application No. PCT/AU00/00076	Applicant's or agent's file reference P88/16154
International filing date (day/month/year) 09 February 2000 (09.02.00)	Priority date (day/month/year) 09 February 1999 (09.02.99)
Applicant OLIJNYK, Mark et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

29 August 2000 (29.08.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer F. Baechler Telephone No.: (41-22) 338.83.38
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**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P88/16154	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No. PCT/AU00/00076	International filing date ( <i>day/month/year</i> ) 9 February 2000	Priority Date ( <i>day/month/year</i> ) 9 February 1999
International Patent Classification (IPC) or national classification and IPC  Int. Cl. <sup>7</sup> B60R 1/074		
Applicant BRITAX RAINSFORDS PTY LTD et al		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.																								
2.	<p>This REPORT consists of a total of 3 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of      sheet(s).</p>																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 5%;">I</td> <td style="width: 5%; text-align: center;"><input checked="" type="checkbox"/></td> <td>Basis of the report</td> </tr> <tr> <td>II</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Priority</td> </tr> <tr> <td>III</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>IV</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Lack of unity of invention</td> </tr> <tr> <td>V</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>VI</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Certain documents cited</td> </tr> <tr> <td>VII</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Certain defects in the international application</td> </tr> <tr> <td>VIII</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Certain observations on the international application</td> </tr> </table>	I	<input checked="" type="checkbox"/>	Basis of the report	II	<input type="checkbox"/>	Priority	III	<input type="checkbox"/>	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	IV	<input type="checkbox"/>	Lack of unity of invention	V	<input checked="" type="checkbox"/>	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	VI	<input type="checkbox"/>	Certain documents cited	VII	<input type="checkbox"/>	Certain defects in the international application	VIII	<input type="checkbox"/>	Certain observations on the international application
I	<input checked="" type="checkbox"/>	Basis of the report																							
II	<input type="checkbox"/>	Priority																							
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IV	<input type="checkbox"/>	Lack of unity of invention																							
V	<input checked="" type="checkbox"/>	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																							
VI	<input type="checkbox"/>	Certain documents cited																							
VII	<input type="checkbox"/>	Certain defects in the international application																							
VIII	<input type="checkbox"/>	Certain observations on the international application																							

Date of submission of the demand 29 August 2000	Date of completion of the report 19 September 2000
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer  D. LUM  Telephone No. (02) 6283 2544

**I. Basis of the report**

1. With regard to the elements of the international application:\*
- ☒ the international application as originally filed.
- ☐ the description,      pages , as originally filed,  
   pages , filed with the demand,  
   pages , received on      with the letter of
- ☐ the claims,      pages , as originally filed,  
   pages , as amended (together with any statement) under Article 19,  
   pages , filed with the demand,  
   pages , received on      with the letter of
- ☐ the drawings,      pages , as originally filed,  
   pages , filed with the demand,  
   pages , received on      with the letter of
- ☐ the sequence listing part of the description:  
   pages , as originally filed  
   pages , filed with the demand  
   pages , received on      with the letter of
2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.  
These elements were available or furnished to this Authority in the following language which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished
4. ☐ The amendments have resulted in the cancellation of:
- ☐ the description,      pages
- ☐ the claims,      Nos.
- ☐ the drawings,      sheets/fig.
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims 1-19	YES
	Claims	NO
Inventive step (IS)	Claims 1-19	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-19	YES
	Claims	NO

**2. Citations and explanations (Rule 70.7)**

Claims 1-19 meet the criteria set forth in PCT Article 33(2)-(4) for novelty, inventive step and industrial applicability. None of the prior art cited, individually or in obvious combination, discloses all the features defined in the claims.

# MADDERNS PATENT COOPERATION TREATY

31 AUG 2000

PCT

From the INTERNATIONAL BUREAU

## NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

MADDERNS  
1st floor  
64 Hindmarsh Square  
Adelaide, S.A. 5000  
AUSTRALIE

Date of mailing (day/month/year) 17 August 2000 (17.08.00)		IMPORTANT NOTICE	
Applicant's or agent's file reference P88/16154			
International application No. PCT/AU00/00076	International filing date (day/month/year) 09 February 2000 (09.02.00)	Priority date (day/month/year) 09 February 1999 (09.02.99)	
Applicant BRITAX RAINSFORDS PTY. LTD. et al			

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:  
AU,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 17 August 2000 (17.08.00) under No. WO 00/47445

### REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

### REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

# PCT

## REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum) P88/16154

**Box No. I TITLE OF INVENTION**

MIRROR PARKING MECHANISM

**Box No. II APPLICANT**

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

BRITAX RAINSFORDS PTY LTD  
Sherriffs Road  
Lonsdale  
South Australia, 5160  
Australia

☐ This person is also inventor.

Telephone No.

(08) 8201 7621

Facsimile No.

(08) 8201 7622

Teleprinter No.

State (that is, country) of nationality:

AUSTRALIA

State (that is, country) of residence:

AUSTRALIA

This person is applicant  
for the purposes of:

☐ all designated  
States

☒ all designated States except  
the United States of America

☐ the United States  
of America only

☐ the States indicated in  
the Supplemental Box

**Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)**

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

OLIJNYK, Mark  
Sherriffs Road  
Lonsdale  
South Australia, 5160  
Australia

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box  
is marked, do not fill in below.)

State (that is, country) of nationality:

AUSTRALIA

State (that is, country) of residence:

AUSTRALIA

This person is applicant  
for the purposes of:

☐ all designated  
States

☐ all designated States except  
the United States of America

☒ the United States  
of America only

☐ the States indicated in  
the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

**Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

The person identified below is hereby/has been appointed to act on behalf  
of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

MADDERNS  
1st Floor  
64 Hindmarsh Square  
Adelaide  
South Australia, 5000  
Australia

Telephone No.

(08) 8223 6666

Facsimile No.

(08) 8223 2588

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

## Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

*If none of the following sub-boxes is used, this sheet should not be included in the request.*

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

FIMERI, Gary Gordon Leslie  
Sherriffs Road  
Lonsdale  
South Australia, 5160  
Australia

This person is:

- ☐ applicant only  
☒ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:  
AUSTRALIA

State (that is, country) of residence:  
AUSTRALIA

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

VAN DE LOO, Paul  
35-37 Stirling Street  
Thebarton  
South Australia, 5031  
Australia

This person is:

- ☐ applicant only  
☒ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:  
AUSTRALIA

State (that is, country) of residence:  
AUSTRALIA

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

ORME, Simon  
Sherriffs Road  
Lonsdale  
South Australia, 5160  
Australia

This person is:

- ☐ applicant only  
☒ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:  
AUSTRALIA

State (that is, country) of residence:  
AUSTRALIA

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only  
☐ applicant and inventor  
☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

**Box No.V DESIGNATION OF STATES**

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes: at least one must be marked):

**Regional Patent**

- ☒ **AP ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

**National Patent (if other kind of protection or treatment desired, specify on dotted line):**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> AE United Arab Emirates                  | <input checked="" type="checkbox"/> LR Liberia                                   |
| <input checked="" type="checkbox"/> AL Albania                               | <input checked="" type="checkbox"/> LS Lesotho                                   |
| <input checked="" type="checkbox"/> AM Armenia                               | <input checked="" type="checkbox"/> LT Lithuania                                 |
| <input checked="" type="checkbox"/> AT Austria                               | <input checked="" type="checkbox"/> LU Luxembourg                                |
| <input checked="" type="checkbox"/> AU Australia                             | <input checked="" type="checkbox"/> LV Latvia                                    |
| <input checked="" type="checkbox"/> AZ Azerbaijan                            | <input checked="" type="checkbox"/> MD Republic of Moldova                       |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina                | <input checked="" type="checkbox"/> MG Madagascar                                |
| <input checked="" type="checkbox"/> BB Barbados                              | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BG Bulgaria                              |  |
| <input checked="" type="checkbox"/> BR Brazil                                | <input checked="" type="checkbox"/> MN Mongolia                                  |
| <input checked="" type="checkbox"/> BY Belarus                               | <input checked="" type="checkbox"/> MW Malawi                                    |
| <input checked="" type="checkbox"/> CA Canada                                | <input checked="" type="checkbox"/> MX Mexico                                    |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein  | <input checked="" type="checkbox"/> NO Norway                                    |
| <input checked="" type="checkbox"/> CN China                                 | <input checked="" type="checkbox"/> NZ New Zealand                               |
| <input checked="" type="checkbox"/> CU Cuba                                  | <input checked="" type="checkbox"/> PL Poland                                    |
| <input checked="" type="checkbox"/> CZ Czech Republic                        | <input checked="" type="checkbox"/> PT Portugal                                  |
| <input checked="" type="checkbox"/> DE Germany                               | <input checked="" type="checkbox"/> RO Romania                                   |
| <input checked="" type="checkbox"/> DK Denmark                               | <input checked="" type="checkbox"/> RU Russian Federation                        |
| <input checked="" type="checkbox"/> EE Estonia                               | <input checked="" type="checkbox"/> SD Sudan                                     |
| <input checked="" type="checkbox"/> ES Spain                                 | <input checked="" type="checkbox"/> SE Sweden                                    |
| <input checked="" type="checkbox"/> FI Finland                               | <input checked="" type="checkbox"/> SG Singapore                                 |
| <input checked="" type="checkbox"/> GB United Kingdom                        | <input checked="" type="checkbox"/> SI Slovenia                                  |
| <input checked="" type="checkbox"/> GD Grenada                               | <input checked="" type="checkbox"/> SK Slovakia                                  |
| <input checked="" type="checkbox"/> GE Georgia                               | <input checked="" type="checkbox"/> SL Sierra Leone                              |
| <input checked="" type="checkbox"/> GH Ghana                                 | <input checked="" type="checkbox"/> TJ Tajikistan                                |
| <input checked="" type="checkbox"/> GM Gambia                                | <input checked="" type="checkbox"/> TM Turkmenistan                              |
| <input checked="" type="checkbox"/> HR Croatia                               | <input checked="" type="checkbox"/> TR Turkey                                    |
| <input checked="" type="checkbox"/> HU Hungary                               | <input checked="" type="checkbox"/> TT Trinidad and Tobago                       |
| <input checked="" type="checkbox"/> ID Indonesia                             | <input checked="" type="checkbox"/> UA Ukraine                                   |
| <input checked="" type="checkbox"/> IL Israel                                | <input checked="" type="checkbox"/> UG Uganda                                    |
| <input checked="" type="checkbox"/> IN India                                 | <input checked="" type="checkbox"/> US United States of America                  |
| <input checked="" type="checkbox"/> IS Iceland                               |  |
| <input checked="" type="checkbox"/> JP Japan                                 | <input checked="" type="checkbox"/> UZ Uzbekistan                                |
| <input checked="" type="checkbox"/> KE Kenya                                 | <input checked="" type="checkbox"/> VN Viet Nam                                  |
| <input checked="" type="checkbox"/> KG Kyrgyzstan                            | <input checked="" type="checkbox"/> YU Yugoslavia                                |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | <input checked="" type="checkbox"/> ZA South Africa                              |
|  | <input checked="" type="checkbox"/> ZW Zimbabwe                                  |

Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:

- ☒ Costa Rica ☒ Dominica ☒ Morocco  
☒ United Republic of Tanzania

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)



Box No. VI PRIORITY CLAIM <input type="checkbox"/> Further priority claims are indicated in the Supplemental B x.				
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) 09/02/1999	PP 8619	AUSTRALIA		
item (2)				
item (3)				

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): 1

\* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):	Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):
ISA/	Date (day/month/year) Number Country (or regional Office)

Box No. VIII CHECK LIST: LANGUAGE OF FILING

<p>This international application contains the following number of sheets:</p> <p>request : 4</p> <p>description (excluding sequence listing part) : 12</p> <p>claims : 5</p> <p>abstract : 1</p> <p>drawings : 6</p> <p>sequence listing part of description : </p> <p>Total number of sheets : 28</p>	<p>This international application is accompanied by the item(s) marked below:</p> <p>1. <input checked="" type="checkbox"/> fee calculation sheet</p> <p>2. <input type="checkbox"/> separate signed power of attorney</p> <p>3. <input type="checkbox"/> copy of general power of attorney; reference number, if any:</p> <p>4. <input type="checkbox"/> statement explaining lack of signature</p> <p>5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s):</p> <p>6. <input type="checkbox"/> translation of international application into (language):</p> <p>7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material</p> <p>8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form</p> <p>9. <input type="checkbox"/> other (specify):</p>
---	---

Figure of the drawings which should accompany the abstract: 2	Language of filing of the international application: ENGLISH
---	--

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

CRAIG L VINALL  
Patent Attorney of Madderms  
Agent for the Applicant

For receiving Office use only

1. Date of actual receipt of the purported international application:	2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA/	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.

For International Bureau use only

Date of receipt of the record copy by the International Bureau:

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU 00/00076

**A. CLASSIFICATION OF SUBJECT MATTER**

Int Cl<sup>7</sup>: B60R 1/074

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC AS ABOVE

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 19833514 A (BUEHLER MOTOR GMBH) 25 March 1999 See figure 1	
A	EP 881124 A (BRITAX RAINSFORDS PTY LIMITED) 2 December 1998 Whole document	
A	FR 2667030 A ( AUTOMOBILES PEUGEOT et al ) 27 march 1992 Whole document	

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# **INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.  
**PCT/AU 00/00076**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
EP	881124	AU	7068/97	JP	11078696		
US	5172884	JP	2277572				
FR	2667030	JP	10236231				
END OF ANNEX							



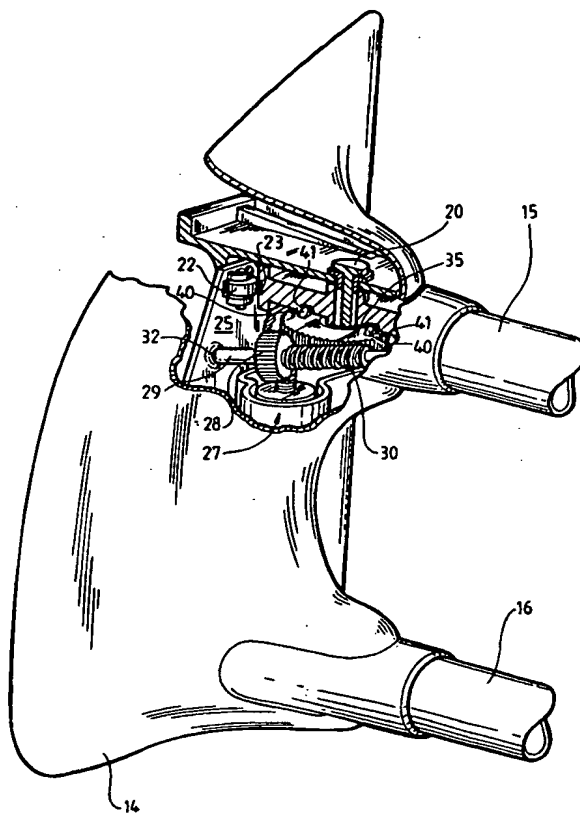
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/AU00/00076 (22) International Filing Date: 9 February 2000 (09.02.00) (30) Priority Data: PP 8619 9 February 1999 (09.02.99) AU (71) Applicant (for all designated States except US): BRITAX RAINSFORDS PTY. LTD. [AU/AU]; Sherriffs Road, Lonsdale, S.A. 5160 (AU). (72) Inventors; and (75) Inventors/Applicants (for US only): OLIJNYK, Mark [AU/AU]; (AU) FIMERI, Gary, Gordon, Leslie [AU/AU]; Sherriffs Road, Lonsdale, S.A. 5160 (AU). VAN DE LOO, Paul [AU/AU]; 35-37 Stirling Street, Thebarton, S.A. 5031 (AU). ORME, Simon [AU/AU]; Sherriffs Road, Lonsdale, S.A. 5160 (AU). (74) Agent: MADDERNS; 1st floor, 64 Hindmarsh Square, Adelaide, S.A. 5000 (AU).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report.	

(54) Title: MIRROR PARKING MECHANISM

## (57) Abstract

This invention is a mirror parking mechanism for a vehicle exterior rear view mirror that rotates a mirror head to a parked position. It comprises a mirror mounting bracket (14), a mirror head (11) that is pivotally connected to the mirror mounting bracket (14) so that the mirror head (11) can rotate from a deployed position where the outermost portion of the mirror head (11) is positioned closer to the vehicle. A detent (22, 23) acts between the mirror mounting bracket (14) and the mirror head (11) that changes from a locked position where the mirror head (11) is held with respect to the mirror mounting bracket (14) to a disengaged position where the mirror head (11) is able to rotate with respect to the mirror mounting bracket (14). A spring (25) acts against the detent (22, 23) to hold it in a locked position. A gear wheel (35) is secured with respect to the mirror head (11), and a worm drive (30) having a shaft (29) is journaled in bearings in the mirror mounting bracket (14). This allows the worm drive (30) to move longitudinally along the shaft (29) as well as rotating about its axis. The worm drive (30) engages the gear wheel (35) and end of the shaft (29) acts against the spring (25). A motor (27) drives the worm drive (30) wherein during initial rotation of the worm drive (30) the detent (22, 23) prevents rotation of the gear wheel (35) which causes the worm drive (30) to move longitudinally and push against the spring (25) to in turn reduce the spring force applied to the detent (22, 23) to enable it to disengage whereupon continued rotation of the worm drive (30) causes the gear wheel (35) and mirror head (11) to rotate. The invention provides a means of relieving high spring loads which are applied to the detents (22, 23) prior to rotation of the mirror head (11). This enables high detent loads to be reasonably overcome.



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## **"MIRROR PARKING MECHANISM"**

This invention relates to an mirror parking mechanism, and in particular to a parking mechanism which is able to move a mirror from an in use or deployed position to a second position where the outermost portion of the mirror head is closer to the vehicle body on which it is mounted.

### **BACKGROUND OF THE INVENTION**

The invention subject of this specification is a variation of the invention described in corresponding Australian Patent Application N° 68997/98 entitled "A Mirror Operating Mechanism". It has a similar operating principle in that a drive means is used to move the mirror from a deployed position to what is termed a parked position with the outermost portion of the mirror head is closer to the vehicle body. This invention also has a similar operating principle in that the initial action of the drive means is to unload the detent which holds the mirror head in the deployed position before moving it to a parked position.

This has the advantage that the detent can provide sufficient holding force to prevent unwanted movement of the mirror head, while at the same time reducing the motor force required to overcome the detent to rotate the mirror head.

### **SUMMARY OF THE INVENTION**

Accordingly, in its broadest form, the invention is a mirror parking mechanism for a vehicle exterior rear view mirror that rotates a mirror head to a parked position comprising:

- a mirror mounting bracket,

a mirror head pivotally connected to said mounting bracket so that said mirror head can rotate from a deployed position to a parked position where the outermost portion of said mirror head is positioned closer to said vehicle,

a detent acting between said mirror mounting bracket and said mirror head that changes from a locked position, where said mirror head is held with respect to said mirror mounting bracket, to a disengaged position where said mirror head is able to be rotated with respect to said mirror mounting bracket,

a spring acting against said detent to hold it in said locked position,

a gear wheel secured with respect to said mirror head,

a worm drive having a shaft that is journalled in bearings in said mirror mounting bracket, that allows movement of said worm drive in a longitudinal direction as well as rotation about its longitudinal axis, said worm drive engaging said gear wheel and one end of said shaft acting against said spring, and

a motor to drive said worm drive wherein during the initial rotation of said worm drive said detent prevents rotation of said gear wheel which causes said worm drive to move longitudinally and push against said spring to in turn reduce the spring force applied to said detent to enable it to disengage whereupon continued rotation of said worm drive causes said gear wheel and mirror head to rotate.

The axis of rotation of the mirror head with respect to the mounting bracket will be generally vertical, however, in some instances, this axis may be inclined from the vertical. Further, the axis may lie in a completely different plane, such as horizontal, in the case of where the mirror is folded against a vehicle in a substantially vertical plane.

As with the abovementioned earlier patent specification, the drive means preferably comprises an electric motor in combination with associated drive gears. The worm drive, which is operated by the drive means, initially causes movement of the spring holding the detent in place before it causes any rotation of the mirror head. This reduction in the force applied to the detent continues until the force

required to move the spring is greater than the force required to rotate the mirror head out of the engagement with the detent. When this occurs, the worm drive remains stationery with respect to its bearings and rotates the gear wheel and mirror head.

Preferably, the mirror head is pivotally attached to the mounting bracket by a spigot or pin connection. Either of the parts may be provided with a spigot with the other part having a corresponding aperture within which the spigot locates. Alternatively, each part may be provided with an aperture through which a pin locates to pivotally connect the components.

The axis of the gear wheel is preferably coaxial with the pivot connection between the mirror head and mounting bracket. The gear wheel may also be releasably held with respect to the mirror head so that, in normal circumstances, rotation of the gear wheel will cause rotation of the mirror head. However, this engagement is releasable so that if the mirror head is manually moved or impacted, the connection between the gear wheel and the mirror head can be released to allow rotation of the mirror head.

Preferably, the interface between the gear wheel and the mirror head comprises a clutch that in normal circumstances provides sufficient coupling between the gear wheel and the mirror head. If force is applied directly to the mirror head, the clutch can disengage to thereby enable the mirror head to rotate freely with respect to the gear wheel.

Preferably, the clutch comprises a plurality of projections on the gear wheel which locate within correspondingly shaped recesses within the mirror head. A spring is used to force the projections into engagement with the recesses and therefore provide the necessary coupling between the gear wheel and the mirror head. If manual force is applied to the mirror head, then the gear wheel will not be



able to rotate as a result of its engagement with the worm drive. Continuous rotation of the mirror head will overcome the spring force applied to the gear wheel and cause the gear wheel to separate with respect to the mirror head thereby disengaging the projections from the corresponding recesses.

The extent to which the mirror head is driven by the drive means will depend upon either abutment of the mirror head against the vehicle, or abutment of a portion of the mirror head against the mounting bracket that prevents further rotation. Preferably, the drive means motor is provided with current sensing circuitry which can sense an increase in current drawn upon the mirror head reaching the limit of its travel. The circuitry is able to de-energise the motor upon the increase in current being sensed.

From the parked position, the operation of the drive means is reversed and will drive the mirror head back to its deployed position. The detents will re-engage at the deployed position resulting in stalling of the drive means, an increase in current draw and resultant de-energisation of the motor.

In another aspect of the invention, the pivot connection between the mirror head and mirror bracket may be such as to allow movement of the mirror head in a direction which is normal to the axis of the pivot connection. The resilient means may comprise springs which are used to force the mirror head against detents which hold the mirror head in its deployed position. The drive means may be secured to the mirror head so that it operates a roller along a ramped surface that initially applies a force against the mirror head so that the mirror head is moved away from engagement with the detent. Once the detent holding force is reduced sufficiently, continued operation of the drive means will disengage the mirror head from the detents and will in turn rotate the mirror head with respect to the mounting bracket.

## DESCRIPTION OF THE DRAWINGS

Embodiments of the invention will now be described, but it should be realised that the scope of the invention is not to be limited to the specific detail of the embodiments. The embodiments are illustrated in the accompanying drawings in which:

Fig 1 shows a perspective view of a rear view mirror assembly according to this embodiment,

Fig 2 shows a part perspective view that is partly cut-away to reveal aspects of the drive means, detent and resilient means,

Fig 3 shows a part cross-sectional view of the mirror parking mechanism,

Fig 4 shows a part cross-sectional view of a second embodiment of a mirror parking mechanism,

Fig 5 shows a part plan view of the embodiment illustrated in Figure 4; and

Fig 6 shows a cross-sectional view of the drive mechanism used in the second embodiment.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig 1 illustrates a rear view mirror assembly 10 which comprises a mirror head 11. The mirror head 11 has a mirror case 12 that supports mirrors 13. The mirror head 11 is attached to a mounting bracket 14 via an upper and lower arms 15 and 16. The mounting bracket 14 is designed to attach to the side of a motor vehicle.

Each of the upper and lower arms 15 and 16 pivotally attach to the mounting bracket 14. According to this invention, drive means is provided which can move the mirror head 11 from a deployed position to a parked position where the outermost portion of the mirror head is brought as close as possible to the side of the motor vehicle. Preferably, the mirror head 11 is rotated so that the mirrors 13 face towards the side of the vehicle.

Fig 1 shows a rear view mirror assembly 10 for use on the left-hand side of a vehicle. It will be obvious that the invention is equally suited to a mirror for use on the right-hand side of a vehicle. Some components will be a mirror image to those on the other side of the vehicle, although many of the components will be interchangeable between the left-hand and right-hand version.

Fig 2 shows the upper arm 15 pivotally attached to the mounting bracket via pivot pin 20. The lower arm 16 is pivotally attached to the mounting bracket by a similar pivot pin 20. The pivot pin 20 on both the upper and lower arms 15 and 16 enable the mirror head 11 to rotate with respect to the mounting bracket 14.

The detent comprises a detent roller 22 that engages within a detent recess 23 that is in the end of each of the upper and lower arms 15 and 16. Each of the detent rollers 22 are pivotally mounted in a spring plate 25 that, as will be explained later, comprises a resilient means that forces each of the detent rollers 22 into the detent recesses 23. The mirror head 11 is held in a deployed position while the detents are engaged.

Fig 3 shows a cross-sectional view of the mounting bracket 14 and the pivot connections between the upper and lower arms 15 and 16 and the mounting bracket 14. The drive means 27 comprises an electric motor with a common drive shaft that extends either side of the motor. There is a first worm drive on either side of the electric motor that engage secondary drive gears 28. The secondary drive gear 28 is mounted on a shaft 29. In addition to carrying the secondary drive gear 28, the shaft 29 also carries the main drive worm 30. The shaft 29 is journalled for rotation about its axis, and an end of the shaft 32 locates within a depression formed in the spring plate 25.

The main drive worm 30 on each shaft 29 engages the main gear wheel 35. The main gear wheel 35 is journalled for rotation about spigot 36 through which the pivot pin 20 locates. Each main gear wheel 35 is held to each of the spigots 36 via a belleville washer 37 and a retainer clip 38. The belleville washer 37 provides a resilient spring force to an outer surface of the main gear wheel 35.

The main drive gear 35 is also provided with a release to allow break-away of the mirror head 11 which comprise projections 40 that are located within corresponding recesses 41 in the upper and lower arms 15 and 16. The projections and recesses 40 and 41 together comprise a clutch, the operation of which will be described below.

When the drive means 27 is operated, the motor worm drives the secondary drive gear 28 and main drive worm 30. As the spring plate 25 is applying maximum force to the detent rollers 22, the main gear wheels 35 resist rotation. Accordingly, as the secondary drive gear 28 and the main drive worm 30 rotate, the shaft 29 is caused to move along its longitudinal axis. This results in the end of each shaft 32 pressing against the spring plate 25.

As operation of the drive means 27 continues, the spring plate 25 is progressively pushed and thereby reduces the load applied to each of the detent rollers 22. When the force applied by each of the detent rollers 22 reduces sufficiently, the force required to further displace the shaft 29 is greater than the force required to rotate each of the main gear wheels 35. At this point, the main drive worms 30 rotate the main gear wheels 35 and the upper and lower arms 15 and 16, which are coupled to the main gear wheels 35 about pivot pins 20. This results in rotation of the mirror head 20. This rotation continues until the detent rollers 22 either engage further detents, or the mirror head 11 reaches a predetermined stop point which in turn causes the electric motor of the drive means 27 to stall. This

results in a sudden increase in current drawn by the motor which is sensed by electronic control means. The motor is then de-energised.

Additional detent recesses may be provided for when the mirror head moves to its parked position. These additional detent recesses are preferably not as deep as the detent recesses 23 which provides sufficient holding force while at the same time allowing the drive means 27 to disengage the detent roller 22 without having to move the spring plate 25. In the reverse direction, the main drive worm 30 drives the main gear wheels 35 until the detent rollers 22 relocate within detent recesses 23. As soon as this occurs, the current drawn by the electric motor of the drive means 27 increases. This is sensed by electronic control means, whereupon it de-energises the motor.

The position of the worm drive 30 shown in Fig 2 will result in the mirror head 11 and the upper and lower arms 15 and 16 rotating in an anti-clockwise direction when viewed from above. The direction of rotation of the mirror head 11 can be reversed by locating the worm drive 30 on the opposite side of the gear wheels 35.

If the mirror head 11 is to be manually moved to a parked position, or if the mirror head is impacted then the projections 40 will disengage from the recesses 41. The projections 40 are shaped so that when sufficient force is applied to the mirror head 11, the main gear wheel 35 is caused to move laterally along each spigot 36. This movement is resisted by the belleville washer 37 which provides a spring force to the main gear wheel 35. As soon as the projections 40 disengage from each of the recesses 41, the upper and lower arms 15 and 16 are free to rotate about the pivot pin 20. Mirror head 11 can be returned to the deployed position either manually or by operation of the drive means 27.

The drive means 27 may be arranged to operate automatically such as when the ignition key is turned to the off position. In addition, the mirror will move to the deployed position as soon as the ignition key is switched on. Alternatively, switch means may be provided to initiate movement to either the parked or deployed position.

A second preferred embodiment is illustrated in Figures 4 to 6. This embodiment uses the similar principle of unloading the detents that hold the upper and lower arms 15 and 16.

In this embodiment, springs 43 pull both the upper and lower arms 15 and 16 inwards with respect to the mounting bracket 14 so that the ends of the arms 15 and 16 bear against the detent pins 45. The ends of each arm 15 and 16 are provided with detent recesses 46 into which the detent pins 45 locate. The detent pins 45 are rigidly connected to the mounting bracket 14.

As with the first embodiment, the upper and lower arms 15 and 16 are pivotally attached to the mounting bracket 14 via pivot pins 20. However in this embodiment, each of the ends of the upper and lower arms 15 and 16 are provided with a slot 48 through which the pivot pins 20 locate. This enables some movement of the upper and lower arms 15 and 16 in a direction normal to the axis of the pivot pins 20. This movement is resisted by springs 43.

An electric motor 50 is used to both push the upper and lower arms 15 and 16 away from the detent pins 45 and to then rotate the upper and lower arms 15 and 16 to a parked position. The electric motor 50 and associated drive components are located within a housing 51 that is secured to the upper and lower arms 15 and 16 by links 52. The links 52 are pivotally attached to the housing 51 and to a spigot 53 on each of the upper and lower arms 15 and 16. The housing 51 is restrained from rotating with respect to the mounting bracket 14 by an arm 58 that slides within an

aperture 62. An alternative means of restraining the housing 51 would be to connect the links 52 to the housing 51.

The electric motor 50, when energised, drives a worm drive 54 that in turn drives a gear 55. The gear 55 drives a second worm drive 56 which in turn drives a gear 57. The gear 57 is journaled around a shaft 59 which itself is journaled for rotation within the housing 51. The gear 57 is coupled to the shaft 59 via clutch plates 60.

The clutch plates 60 are linked to the shaft 59 via splines. However, if the gear 57 were to disengage from the clutch plates 60, then it would be free to rotate about the shaft 59. A spring 61 is used to force the clutch plates 60 into contact with the gear 57.

As with the previous embodiment, the gear 57 and clutch plates 60 are provided with projections on one of the components which engage recesses in the other component. In normal operating conditions, the spring 61 enables the engagement of the gear 57 with the clutch plates 60 to be maintained to ensure that operation of the electric motor 50 drives the shaft 59.

Gears 63 are fixed to each end of the shaft 59. The gears 63 drive gear sectors 64 which are formed in the ends of the upper and lower arms 15 and 16. Rotation of the gears 63 will attempt to rotate the upper and lower arms 15 and 16 about pivot pins 20. However, the detent pins 45 resist the rotation of the upper and lower arms 15 and 16 which in turn results in the gear sectors 64 remaining stationary with the gears 63 moving the shaft 59 and housing 51 with respect to the gear sectors 64.

The shaft 59 is provided with rollers 65 at each end which engage ramps 66. The ramps 66 are fixed with respect to the mounting bracket 14.

Accordingly, initial operation of the motor 50 will result in the shaft 59 moving along the ramped surface 66, and due to the angle of the ramped surface 66, the shaft 59 will move towards the end of the upper and lower arms 15 and 16. As the housing 51, and therefore the shaft 59, are linked to the upper and lower arms 15 and 16, and as the housing 51 is prevented from rotating about shaft 59 by the arm 58, movement of the shaft 59 will also cause movement of the upper and lower arms 15 and 16. This movement will be against the force provided by the springs 43 which will in turn reduce the force applied to the detent pins 45.

This outward movement of the upper and lower arms 15 and 16 will continue until the force required to move the shaft 59 along the ramps 66 will be greater than the resistance to rotation of the upper and lower arms 15 and 16. At this point, the shaft 59 will remain stationary and the gear sectors 64 will rotate the upper and lower arms 15 and 16 about the pivot pins 20.

The gear ratio between the gears 63 and gear sectors 64 may be of the order of 3:1. A 90° rotation of the mirror head 11 would thus result from a 270° rotation of the shaft 59.

In the case of manual movement of the mirror head 11, the detent force provided by the spring 43 will be overcome, and the gear sectors 64 will drive the shaft via gears 63. This rotation will be resisted due the engagement of the clutch plates 60 with the gear 57. This will result in the projections and recesses between the clutch plates 60 and the gear 57 forcing the gear 57 to separate from the clutch plates 60 against the force provided by spring 61. Once the gear 57 disengages from the clutch plates 60, the shaft 59 will be free to rotate.

Preferably, the clutch plates 60 are designed so that they will only re-engage through alignment of the projections and recesses once the clutch plates 60 have rotated through a full 360°. This will mean that there will be no unwanted re-



engagement of the clutch plates 60 during the normal range of movement that would occur in either a forward to rearward manual movement of the mirror head 11.

As will be seen from the above description, both embodiments provide designs which minimises the motor size required to drive the mirror head 11 to a parked position while at the same time providing sufficient detent force to hold the mirror head 11 in its deployed position.

In addition, the designs provide failsafe detents. The detents will re-engage even if the mirror head 11 has been electrically rotated to a parked position and is then manually rotated to its deployed position. This is an important safety feature.

## THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A mirror parking mechanism for a vehicle exterior rear view mirror that rotates a mirror head to a parked position comprising:
  - a mirror mounting bracket,
  - a mirror head pivotally connected to said mounting bracket so that said mirror head can rotate from a deployed position to a parked position where the outermost portion of said mirror head is positioned closer to said vehicle,
  - a detent acting between said mirror mounting bracket and said mirror head that changes from a locked position, where said mirror head is held with respect to said mirror mounting bracket, to a disengaged position where said mirror head is able to be rotated with respect to said mirror mounting bracket,
  - a spring acting against said detent to hold it in said locked position,
  - a gear wheel secured with respect to said mirror head,
  - a worm drive having a shaft that is journalled in bearings in said mirror mounting bracket, that allows movement of said worm drive in a longitudinal direction as well as rotation about its longitudinal axis, said worm drive engaging said gear wheel and one end of said shaft acting against said spring, and
  - a motor to drive said worm drive wherein during the initial rotation of said worm drive said detent prevents rotation of said gear wheel which causes said worm drive to move longitudinally and push against said spring to in turn reduce the spring force applied to said detent to enable it to disengage whereupon continued rotation of said worm drive causes said gear wheel and mirror head to rotate.
2. A mirror parking mechanism according to claim 1 wherein said pivot comprises a spigot secured to said mirror mounting bracket.
3. A mirror parking mechanism according to claim 1 wherein said pivot comprises a pin.

4. A mirror parking mechanism according to claim 1 wherein said detent comprises a recess on said mirror head and a projection that locates in said recess and that is held in place by said spring.
5. A mirror parking mechanism according to claim 4 wherein said spring comprises a plate hinged at one end and positioned so that the other end bears against and applies a force to said detent.
6. A mirror parking mechanism according to claim 5 wherein said projection comprises a roller journalled for rotation in said spring plate.
7. A mirror parking mechanism according to claim 6 wherein said gear wheel is journalled with respect to the axis of said pivot between said mirror head and mirror mounting bracket and further comprises a clutch between said gear wheel and said mirror head that prevents rotation of said gear wheel with respect to said mirror head during said rotation of said mirror head, but that allows break-away of said mirror head with respect to said gear wheel.
8. A mirror parking mechanism according to claim 7 wherein said clutch comprises a plurality of projections on said gear wheel and a plurality of recesses within said mirror head within which said projections locate and a gear wheel spring that holds said gear wheel against said mirror head.
9. A mirror parking mechanism for a vehicle exterior rear view mirror that rotates a mirror head to a parked position comprising:
  - a mirror mounting bracket,
  - a mirror head,
  - a pair of arms each attached at one end to said mirror head, the other end of each arm pivotally connected to said mounting bracket so that said mirror

head can rotate from a deployed position to a parked position where the outermost portion of said mirror head is positioned closer to said vehicle,

a detent acting between said mirror mounting bracket and each said arm that changes from a locked position, where said mirror head is held with respect to said mirror mounting bracket, to a disengaged position where said mirror head is able to be rotated with respect to said mirror mounting bracket,

a spring acting against said detents to hold them in said locked position,

a gear wheel secured with respect to each said arm and journaled with respect to the axis of said pivot between said arms and said mirror mounting bracket,

a pair of worm drives each having a shaft that is journaled in bearings in said mirror mounting means, that allows movement of said worm drives in a longitudinal direction as well as rotation about their longitudinal axis, said worm drives engaging said gear wheels and one end of each said shaft acting against said spring, and

a motor to drive each said worm drive wherein during the initial rotation of each said worm drive said detents prevent rotation of each said gear wheel which causes said worm drives to move longitudinally and push against said spring to in turn reduce the spring force applied to said detents to enable them to disengage whereupon continued rotation of said worm drives cause said gear wheels and mirror head to rotate.

10. A mirror parking mechanism according to claim 9 wherein each said pivot comprises a pin.

11. A mirror parking mechanism according to claim 9 wherein each said detent comprises a recess on the end of each said arm and a projection that locates in said recess and that is held in place by said spring.

12. A mirror parking mechanism according to claim 11 wherein said spring comprises a plate hinged at an intermediate position and positioned so that each end of said spring bears against and applies a force to one of said detents.
13. A mirror parking mechanism according to claim 12 wherein each said projection comprises a roller journalled for rotation in said spring plate.
14. A mirror parking mechanism according to claim 13 wherein each said gear wheel is journalled with respect to the axis of said pivots between said arms and mirror mounting bracket, and further comprises a clutch between each said gear wheel and said arm that prevents rotation of each said gear wheel with respect to said arm during said rotation of said mirror head, but that allows break-away of said mirror head with respect to each said gear wheel.
15. A mirror parking mechanism according to claim 14 wherein each said clutch comprises a plurality of projections on each said gear wheel and a plurality of recesses within each said arm within which said projections locate and a gear wheel spring that holds each said gear wheel against said arms.
16. A mirror parking mechanism for a vehicle exterior rear view mirror that rotates a mirror head to a parked position comprising:
  - a mirror mounting bracket,
  - a mirror head pivotally connected to said mounting bracket so that said mirror head can rotate from a deployed position to a parked position where the outermost portion of said mirror head is positioned closer to said vehicle, said pivot connection comprising a pin and an elongate aperture in said mirror head that allows said mirror head to move transverse to the longitudinal axis of said pin,
  - a detent acting between said mirror mounting bracket and said mirror head that changes from a locked position, where said mirror head is held with

respect to said mirror mounting bracket, to being disengaged so that said mirror head is able to rotate with respect to said mirror mounting bracket,

a spring acting against said mirror head to force it against said detent to thereby hold said mirror head in said locked position,

a roller within said mirror mounting bracket,

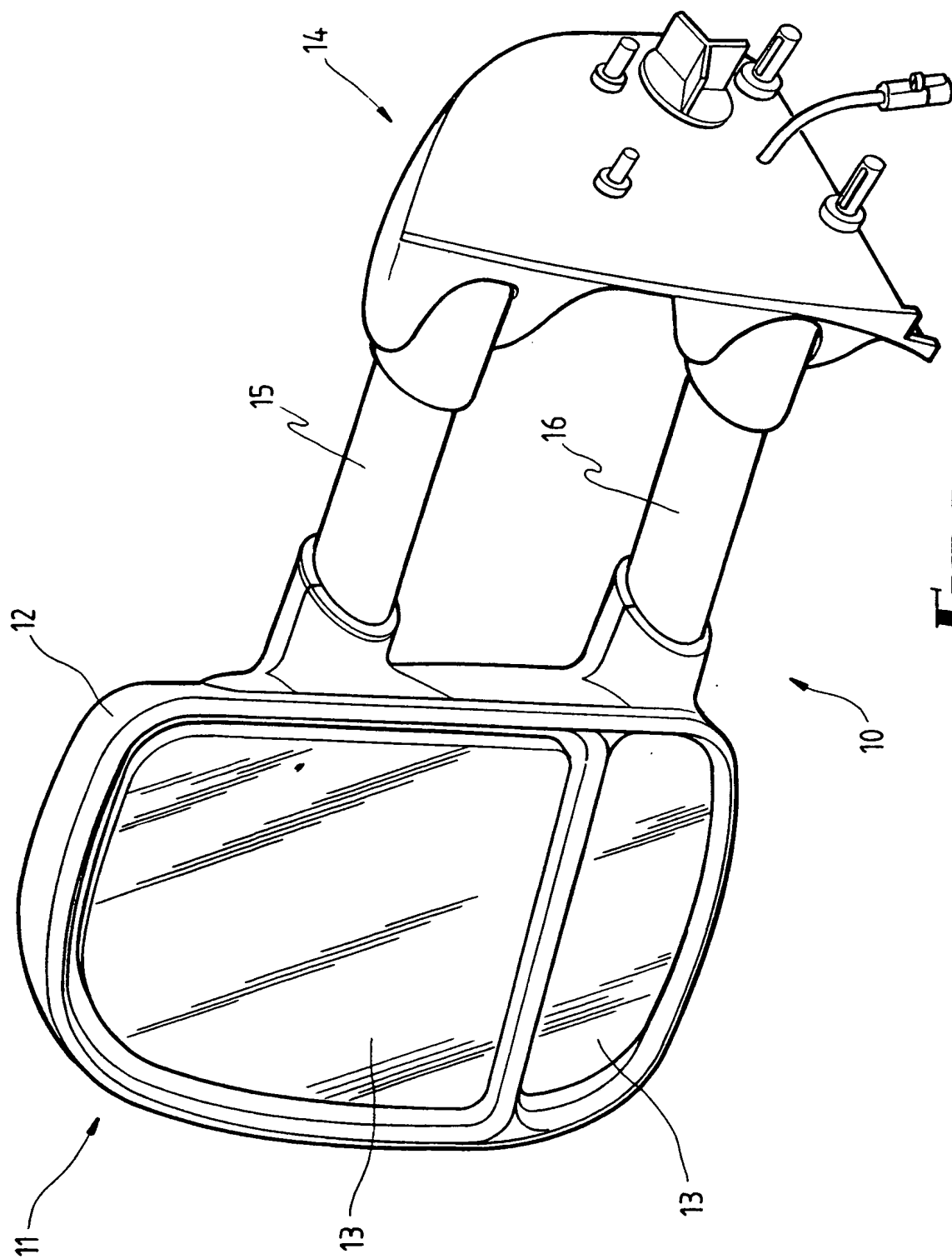
a ramped surface fixed to said mirror mounting bracket and engaged by said roller, and

a motor in a motor housing, wherein said housing is secured with respect to said mirror head, said roller rotated by said motor so that it moves along said ramped surface, said ramped surface positioned so that said motor housing and mirror head are first pushed away from said mirror mounting bracket to disengage said detent and secondly to rotate said mirror head when said detent is disengaged.

17. A mirror parking mechanism according to claim 16 wherein said spring comprises a coil spring attached at one end to said mirror head and at the other end to said pin.

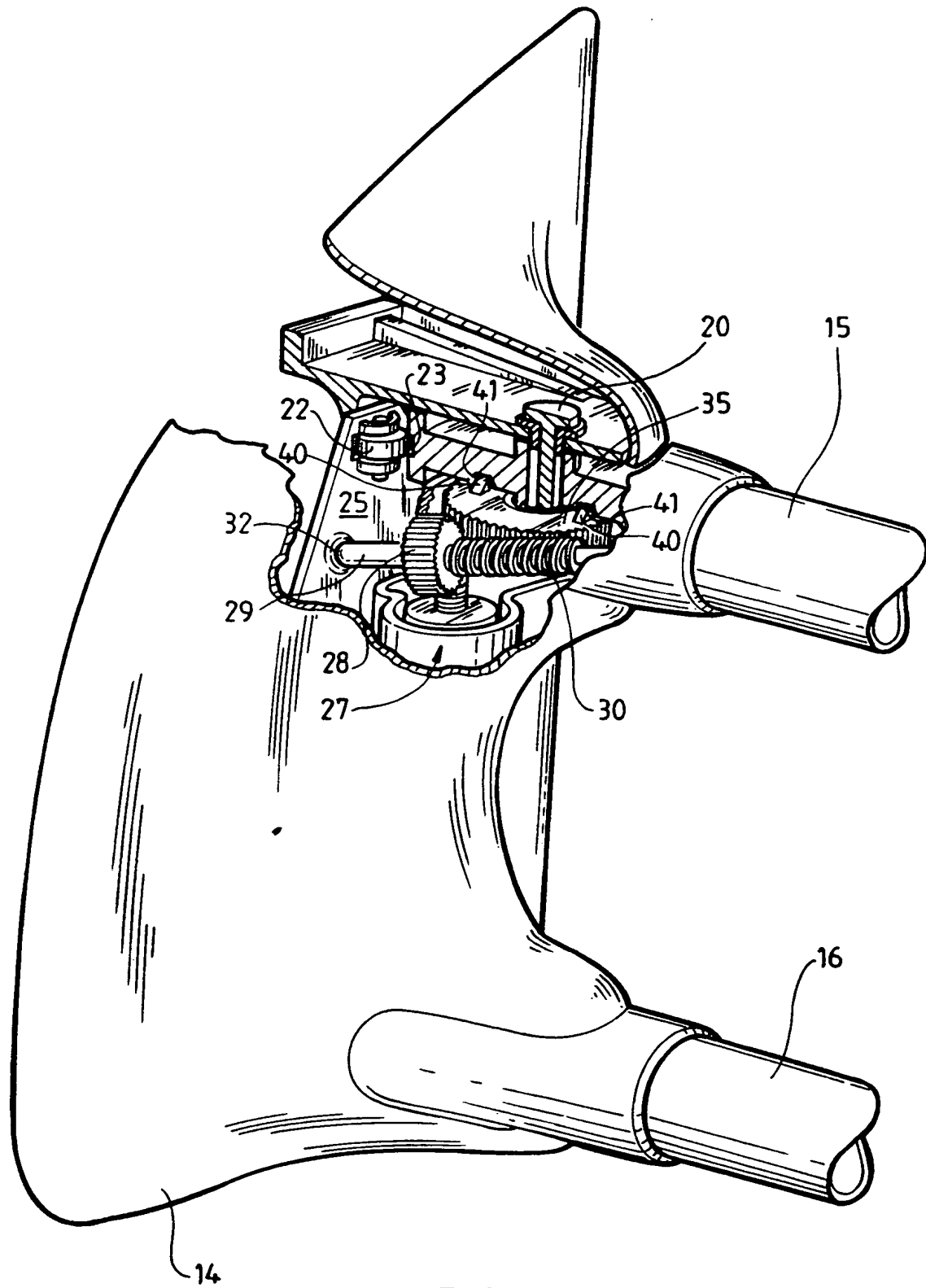
18. A mirror parking mechanism according to claim 17 further comprising a pair of arms extending between said mirror head and said mirror mounting bracket, an end of each arm pivotally attached to said mirror mounting bracket.

19. A mirror parking mechanism according to claim 18 further comprising a detent, spring, a roller and ramped surface at each of the said pivotally attached ends of said arms.

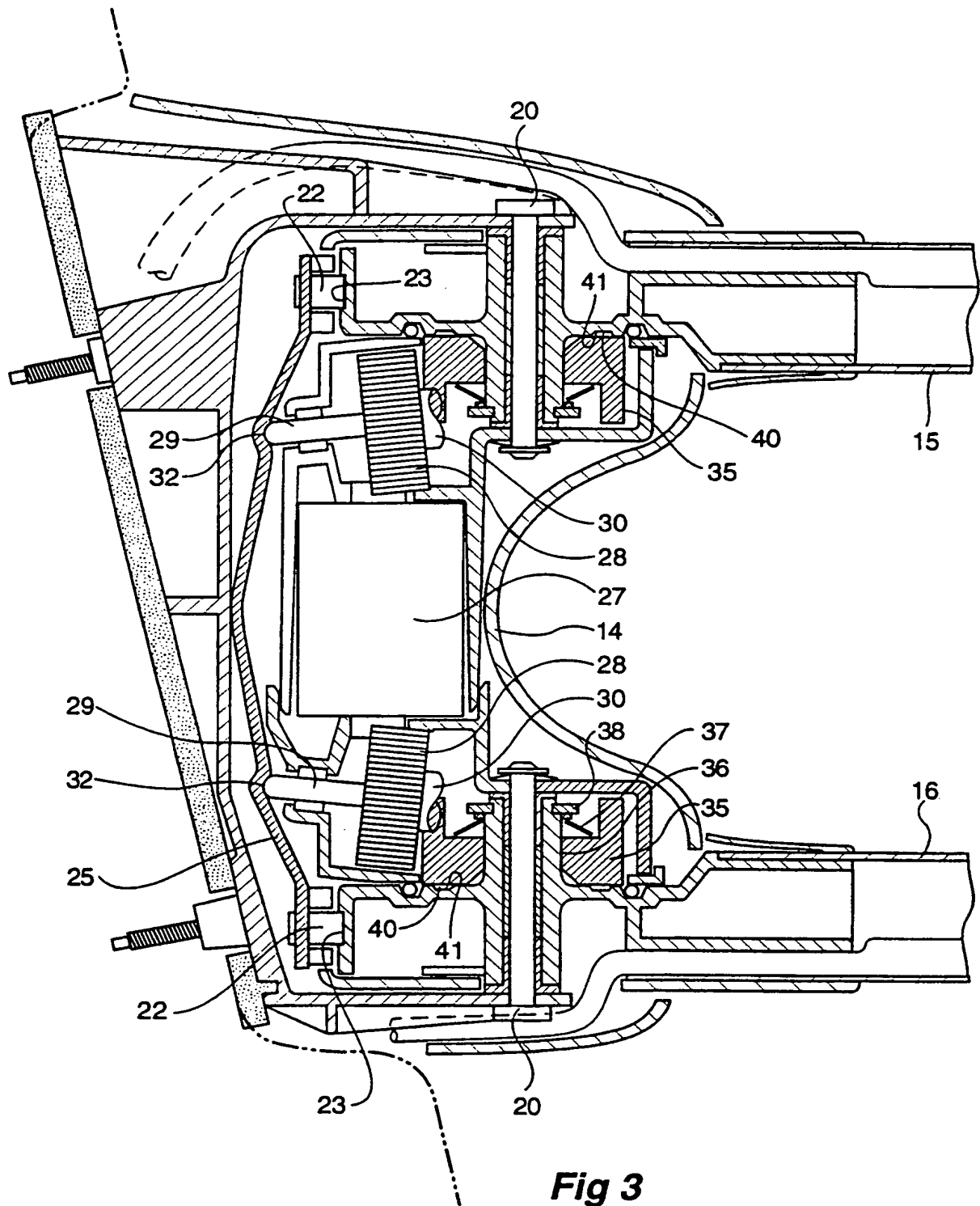


**FIG 1**

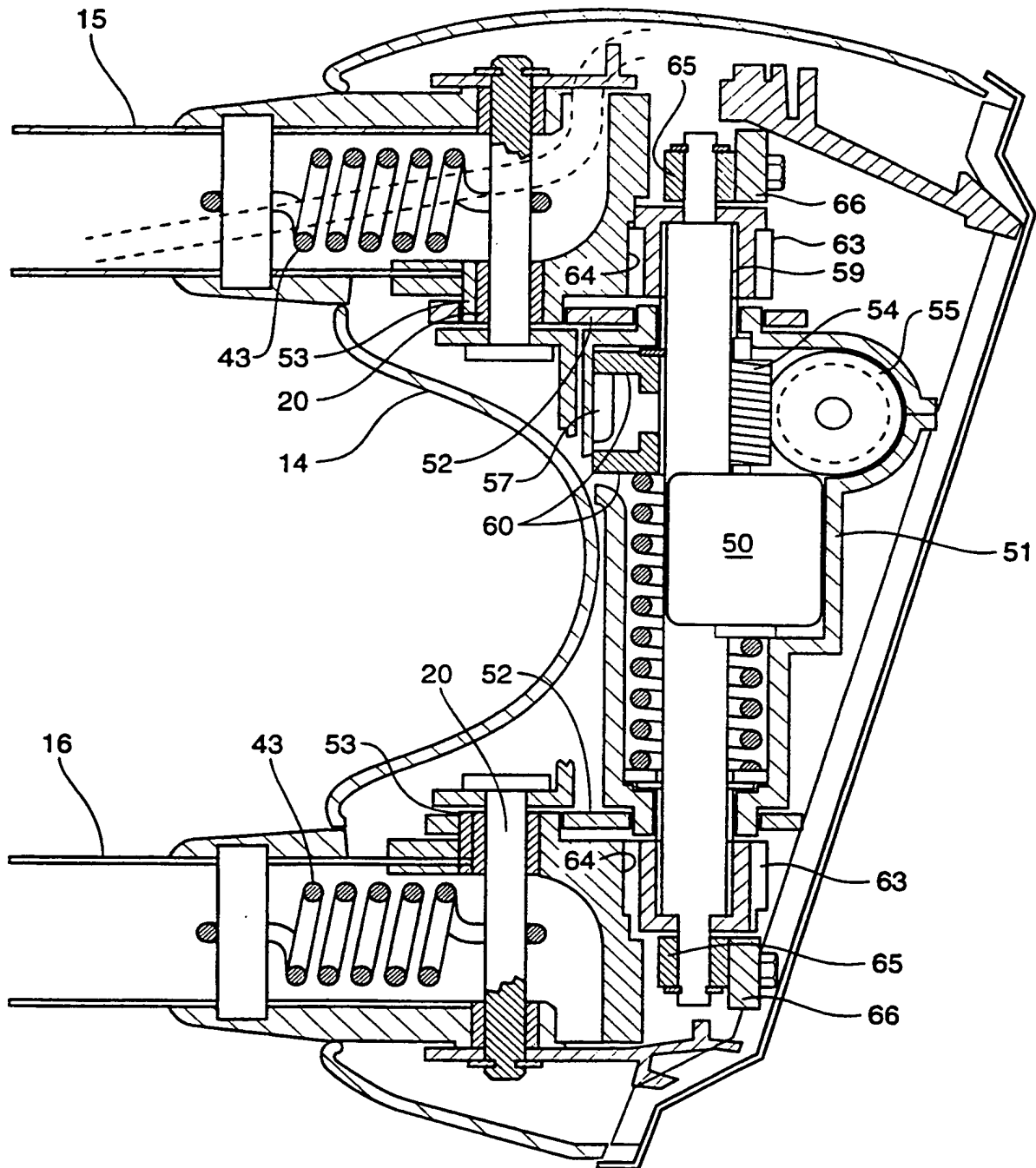
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**FIG 2**





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**Fig 4**

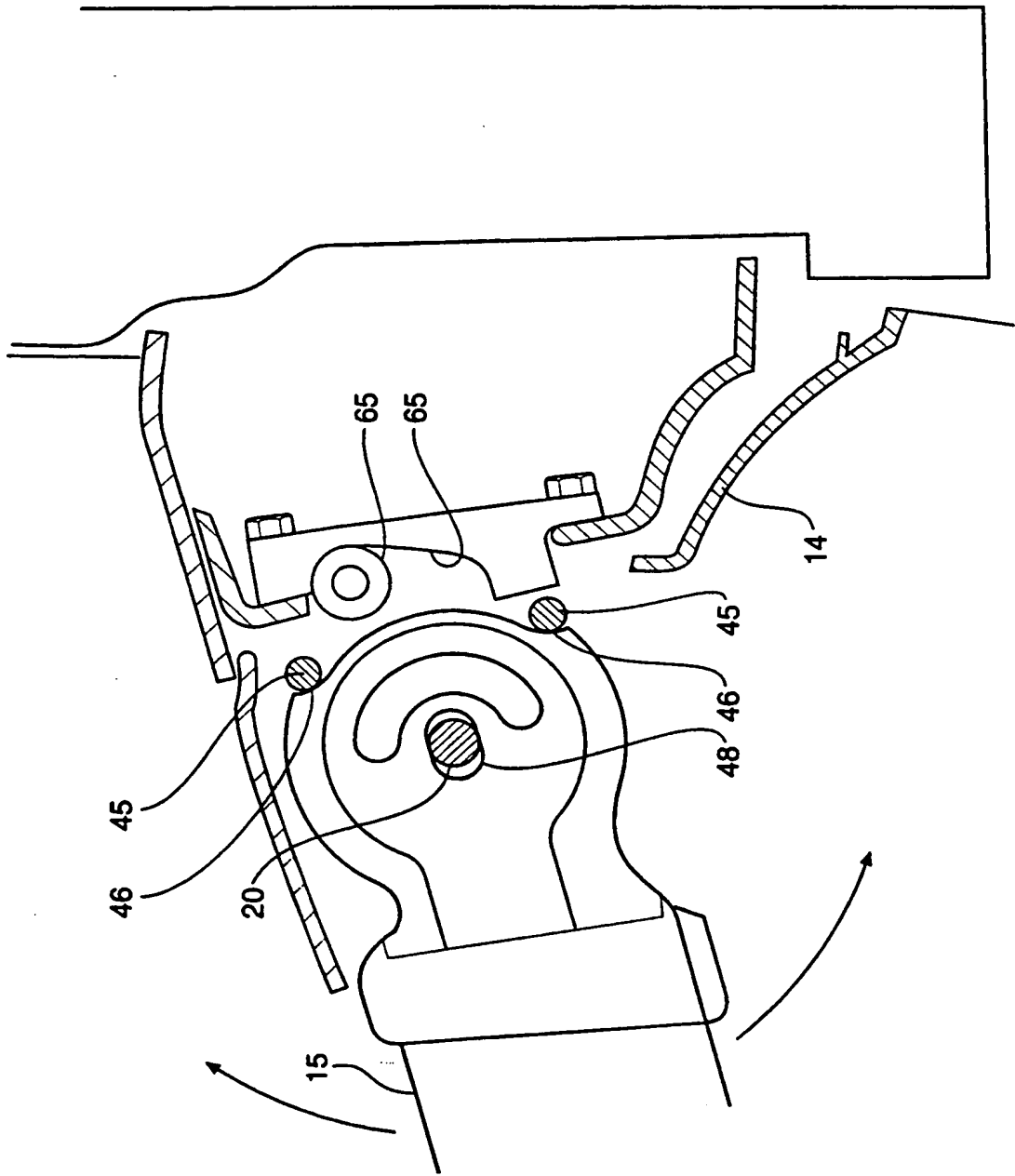
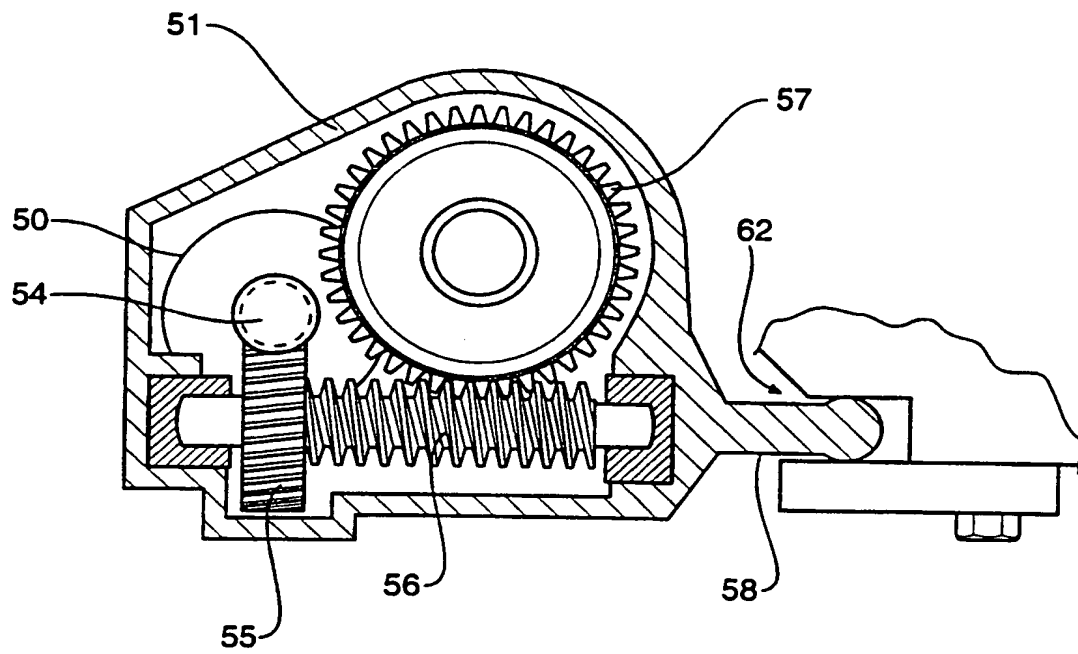


Fig 5

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**Fig 6**

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU 00/00076

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>																						
Int Cl <sup>7</sup> : B60R 1/074																						
According to International Patent Classification (IPC) or to both national classification and IPC																						
<b>B. FIELDS SEARCHED</b>																						
Minimum documentation searched (classification system followed by classification symbols) IPC AS ABOVE																						
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched																						
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Derwent World Patent Index																						
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>																						
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																				
A	DE 19833514 A (BUEHLER MOTOR GMBH) 25 March 1999 See figure 1																					
A	EP 881124 A (BRITAX RAINSFORDS PTY LIMITED) 2 December 1998 Whole document																					
A	FR 2667030 A ( AUTOMOBILES PEUGEOT et al ) 27 march 1992 Whole document																					
<input type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex																						
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A"</td> <td>document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T"</td> <td>later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E"</td> <td>earlier application or patent but published on or after the international filing date</td> <td>"X"</td> <td>document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L"</td> <td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y"</td> <td>document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O"</td> <td>document referring to an oral disclosure, use, exhibition or other means</td> <td>"&amp;"</td> <td>document member of the same patent family</td> </tr> <tr> <td>"P"</td> <td>document published prior to the international filing date but later than the priority date claimed</td> <td></td> <td></td> </tr> </table>			"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family	"P"	document published prior to the international filing date but later than the priority date claimed		
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Date of the actual completion of the international search 21 February 2000		Date of mailing of the international search report 14 MAR 2000																				
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929		Authorized officer  D.R. LUM Telephone No.: (02) 6283 2544																				

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
**PCT/AU 00/00076**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
EP	881124	AU	7068/97	JP	11078696		
US	5172884	JP	2277572				
FR	2667030	JP	10236231				
END OF ANNEX							